

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Withdrawn) A method of automated sample processing, comprising the steps of:

providing at least one sample;

determining a processing sequence for said at least one sample;

actively regulating temperature of said at least one sample; and

automatically processing said at least one sample.

2. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of actively regulating temperature comprises the step of reducing temperature of said at least one sample.

3. (Withdrawn) A method of automated sample processing as described in claim 2 and further comprising the step of controlling a reduction in temperature.

4. (Withdrawn) A method of automated sample processing as described in claim 2 wherein said step of actively regulating temperature comprises the step of maintaining sample temperature at less than about ambient temperature of a sample processing system wherein the processing occurs.

5. (Withdrawn) A method of automated sample processing as described in claim 2 wherein said step of actively regulating temperature further comprises the step of increasing temperature of said at least one sample.

6. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of actively regulating temperature of said sample comprises the step of actively regulating temperature of said at least one sample to at least one tolerance.

7. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of actively regulating temperature of said at least one sample comprises the step of actively maintaining a temperature of about a sample set point.

8. (Withdrawn) A method of automated sample processing as described in claim 7 wherein said step of actively maintaining a temperature of about a sample set-point comprises the step of actively maintaining temperature within a range of about 1 degree above and 1 degree below said sample set point.

9. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of actively regulating temperature of said at least one sample comprises the step of regulating a ramped increase in temperature.

10. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of actively regulating temperature of said at least one sample comprises the step of regulating a ramped decrease in temperature.

11. (Withdrawn) A method of automated sample processing as described in claim 9 wherein said step of actively regulating temperature of said at least one sample comprises the step of regulating a reduced rate of temperature change.

12. (Withdrawn) A method of automated sample processing comprising the steps of:

providing at least one sample:

providing a reagent in a container:

regulating temperature of said reagent in said container;

determining a processing sequence for said at least one sample that includes the steps of:

applying said reagent to said at least one sample; and

actively regulating temperature of said at least one sample; and

automatically processing said at least one sample according to said processing sequence.

13. (Withdrawn) A method of automated sample processing as described in claim 12 wherein said step of regulating temperature of said reagent in said container comprises the step of actively regulating temperature of said reagent in said container.

14. (Withdrawn) A method of automated sample processing as described in claim 13 wherein said step of actively regulating temperature of said reagent in said container comprises the step of optimizing reagent temperature in said container at a thermal set point.

15. (Withdrawn) A method of automated sample processing as described in claim i4 wherein said step of optimizing reagent temperature in said container at a thermal set point comprises the step of actively maintaining reagent temperature at less than about an ambient temperature of a sample processing system wherein said container is provided.

16. (Withdrawn) A method of automated sample processing as described in claim 13 wherein said step of actively regulating temperature of said reagent in said container comprises the step of maintaining reagent shelf life.

17. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of actively regulating temperature of said at least one sample comprises the step of adaptively regulating temperature of said at least one sample.

18. (Withdrawn) A method of automated sample processing as described in claim 17 wherein said step of adaptively regulating temperature of said at least one sample comprises the step of adaptively regulating temperature corresponding to at least one sample carrier.

19. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of actively regulating temperature of said at least one sample comprises the step of utilizing a Peltier device.

20. (Withdrawn) A method of automated sample processing as described in claim 17 wherein said step of adaptively regulating temperature of said at least one sample comprises the step of regulating temperature with a Peltier grid.

21. (Withdrawn) A method of automated sample processing as described in claim 17 wherein said step of adaptively regulating temperature of said at least one sample comprises the step of utilizing a conductive device.

22. (Withdrawn) A method of automated sample processing as described in claim 20 wherein said step of regulating temperature with a Peltier grid comprises the step of regulating temperature with a plurality of thermal elements each corresponding to a sample carrier support.

23. (Withdrawn) A method of automated sample processing as described in claim 17 wherein said step of adaptively regulating temperature of said at least one sample comprises the step of adaptively decreasing temperature from ambient temperature to a target temperature, wherein said ambient temperature is greater than said target temperature.

24. (Withdrawn) A method of automated sample processing as described in claim 17 wherein said step of adaptively regulating temperature of said at least one sample comprises the step of providing a controlled increase in temperature.

25. (Withdrawn) A method of automated sample processing as described in claim 17 wherein said step of adaptively regulating temperature of said at least one sample comprises the step of decreasing temperature.

26. (Withdrawn) A method of automated sample processing as described in claim 25 wherein said step of adaptively regulating temperature of said at least one sample comprises the step of providing a controlled decrease in temperature.

27. (Withdrawn) A method of automated sample processing as described in claim 26 wherein said step of adaptively regulating temperature of said at least one sample comprises the steps of:

determining at least one desired sample temperature; and
decreasing temperature of said at least one sample to said desired sample temperature.

28. (Withdrawn) A method of automated sample processing as described in claim 27 wherein said step of adaptively regulating temperature of said at least one sample further comprises the steps of:

determining a sample temperature tolerance; and

maintaining said sample temperature within said sample temperature tolerance.

29. (Withdrawn) A method of automated sample processing as described in claim 27 wherein an ambient system temperature is above said temperature of said at least one sample.

30. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of actively regulating temperature of said at least one sample comprises the step of reducing a rate of temperature change.

31. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of actively regulating temperature of said at least one sample comprises the step of maintaining at least one temperature tolerance corresponding to at least one sample carrier.

32. (Withdrawn) A method of automated sample processing as described in claim 13 wherein said step of actively regulating temperature of said at least one sample comprises the step of adaptively regulating temperature of said at least one sample.

33. (Withdrawn) A method of automated sample processing as described in claim 32 wherein said step of adaptively regulating temperature of said at least one sample comprises the step of adaptively regulating temperature corresponding to at least one sample carrier.

34. (Withdrawn) A method of automated sample processing as described in claim 13 wherein said step of actively regulating temperature of said at least one sample comprises the step of adaptively decreasing temperature from ambient temperature to a target temperature wherein said ambient temperature is greater than said target temperature.

35. (Withdrawn) A method of automated sample processing as described in claim 19 wherein said step of actively regulating temperature of said at least one sample comprises the step of maintaining a temperature of between about 2 and about 8 degrees Celsius.

36. (Withdrawn) A method of automated sample processing as described in claim 19 wherein said step of actively regulating temperature of said at least one sample comprises the step of maintaining a temperature within a range of about 2 degrees above and 2 degrees below 24 degrees Celsius.

37. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of providing at least one sample comprises the step of providing at least one batch of samples.

38. (Withdrawn) A method of automated sample processing as described in claim 1 and further comprising the step of determining at least one temperature tolerance for at least one component of a sample processing system wherein the processing occurs.

39. (Withdrawn) A method of automated sample processing as described in claim 38 wherein said step of determining at least one temperature tolerance for at least one component of said sample processing system comprises the step of determining at least one tolerance corresponding to at least one sample carrier.

40. (Withdrawn) A method of automated sample processing as described in claim 38, wherein said step of determining at least one tolerance for at least one component of said sample processing system comprises the step of determining at least one tolerance corresponding to at least one reagent.

41. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of determining a processing sequence for said at least one sample comprises the step of determining an immunohistochemistry processing sequence.

42. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of determining a processing sequence for said at least one sample comprises the step of determining an in-situ hybridization processing sequence.

43. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of determining a processing sequence for said at least one sample comprises the step of determining a fluorescent in-situ hybridization processing sequence.

44. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of determining a processing sequence for said at least one sample comprises the step of determining a microarray processing sequence.

45. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of determining a processing sequence for said at least one sample comprises the step of determining a target retrieval processing sequence.

46. (Withdrawn) A method of automated sample processing as described in claim 1 wherein said step of determining a processing sequence for said at least one sample comprises the step of determining a sample staining processing sequence.

47. (Withdrawn) A method of automated sample processing as described in claim 17 wherein said step of adaptively regulating temperature of said at least one sample comprises the step of adaptively reducing rates of temperature change.

48 - 74. (Canceled)

75. (Currently Amended) An automated sample processing system for processing at least one sample on a carrier according to a processing protocol, comprising:

a carrier retention device for retaining said at least one sample during said processing; and

an active temperature regulation element to which said at least one sample is responsive, wherein said active temperature regulation element regulates the temperature of said at least one sample at a set point and to within a tolerance specified by the protocol.

76 - 89. (Canceled)

90. (Previously Presented) An automated sample processing system as described in claim 75 wherein said automated sample processing system comprises an automated immunohistochemistry processing system.

91. (Previously Presented) An automated sample processing system as described in claim 75 wherein said automated sample processing system comprises an automated in-situ hybridization processing system.

92. (Previously Presented) An automated sample processing system as described in claim 75 wherein said automated sample processing system comprises an automated fluorescent in-situ hybridization processing system.

93. (Previously Presented) An automated sample processing system as described in claim 75 wherein said automated sample processing system comprises an automated microarray processing system.

94. (Previously Presented) An automated sample processing system as described in claim 75 wherein said automated sample processing system comprises an automated target retrieval processing system.

95. (Previously Presented) An automated sample processing system as described in claim 75 wherein said automated sample processing system comprises an automated stainer processing system.

96. (Previously Presented) An automated sample processing system as described in claim 95 wherein said active temperature regulation element to which said at least one sample is responsive comprises a temperature reduction element.

97. (Previously Presented) An automated sample processing system as described in claim 96 wherein said temperature reduction element comprises a controlled active temperature reduction element.

98. (Previously Presented) An automated sample processing system as described in claim 96 wherein said temperature reduction element maintains said sample at less than an ambient temperature.

99. (Previously Presented) An automated sample processing system as described in claim 95 wherein said active temperature regulation element to which said at least one sample is responsive comprises a temperature ramp up element.

100. (Previously Presented) An automated sample processing system as described in claim 95 wherein said active temperature regulation element to which said at least one sample is responsive comprises a temperature ramp down element.

101. (Previously Presented) An automated sample processing system as described in claim 95 wherein said active temperature regulation element to which said sample is responsive causes both a regulated temperature increase and a regulated temperature decrease of said sample.

102. (Currently Amended) An automated sample processing system for processing at least one sample on a carrier according to a processing protocol, comprising:

at least one container having a reagent therein for application to said at least one sample during said processing;

a sample carrier retention device for retaining said at least one sample during said processing;

a reagent temperature control element to which said reagent in said at least one container is responsive; and

a sample temperature control element to which said at least one sample is responsive, wherein said sample temperature control element regulates the temperature of said at least one sample at a set point and to within a tolerance specified by the protocol.

103. (Previously Presented) An automated sample processing system as described in claim 102 wherein said reagent temperature control element comprises is configured to reduce a temperature of said reagent.

104. (Previously Presented) An automated sample processing system as described in claim 102 wherein said reagent temperature control element is configured to reduce a rate of temperature change of said reagent.

105. (Previously Presented) An automated sample processing system as described in claim 102 wherein said reagent temperature control element is configured to regulate temperature of a plurality of reagents, wherein each reagent of said plurality of reagents is in a respective container.

106. (Previously Presented) An automated sample processing system as described in claim 102 wherein said reagent temperature control element comprises an adaptive temperature regulation element.

107. (Previously Presented) An automated sample processing system as described in claim 102 wherein said reagent temperature control element is configured to optimize temperature of at least one reagent in said at least one container.

108. (Previously Presented) An automated sample processing system as described in claim 102 wherein said reagent temperature control element is configured to maintain temperature of at least one reagent in said at least one container at a thermal set point.

109. (Previously Presented) An automated sample processing system as described in claim 102 wherein said sample temperature control element is configured to increase temperature of said at least one sample during said processing.

110. (Previously Presented) An automated sample processing system as described in claim 102 wherein said sample temperature control element is configured to decrease temperature of said at least one sample during said processing.

111. (Previously Presented) An automated sample processing system as described in claim 102 wherein said sample temperature control element is configured to both increase and decrease temperature of said at least one sample during said processing.

112. (Previously Presented) An automated sample processing system as described in claim 102 wherein said sample temperature control element is configured to provide a controlled ramp up of temperature of said at least one sample during said processing.

113. (Previously Presented) An automated sample processing system as described in claim 102 wherein said sample temperature control element is configured to provide a controlled ramp down of temperature of said at least one sample during said processing.